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ABSTRACT

This report was created to generate ideas about the kinds of data that might be used to produce follow-up analyses of "Measuring Up 2000," the state-by-state report card for higher education. The analysis attempts to present report card data and related information graphically and mathematically in ways that might be useful to policymakers and higher education stakeholders. The analysis begins by depicting the grades in "Measuring Up 2000" by region in tabular and graphic form. The second section uses ratio analysis as a technique to interpret one grade relative to another, and the third section looks at two common state inputs to higher education: state appropriations and student aid. These inputs are analyzed in the context of the state grades in "Measuring Up 2000." The final section analyzed a sample state, New Mexico, using the preceding analyses. The purpose of this section is to generate discussion about the type of information the National Center might provide in order to offer state guidance for report card improvement. Six appendixes contain supplemental tables. (Contains 16 tables and 12 figures.) (SLD)

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Supplementary Analysis for "Measuring Up 2000": An Exploratory Report

Mario Martinez

The National Center for Public Policy and Higher Education

November 2001

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An Exploratory Report

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Supplementary Analysis for *Measuring Up 2000*:

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By Mario Martinez

November 2001

The National Center for Public Policy and Higher Education

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Contents

Foreword ..... *iv*
Executive Summary ..... *v*

Introduction 1
A National Look at Regional Grade Averages 2
Report Card Ratios and Regional Average Analysis 5
A National Look at State Input Effects on the Grades in *Measuring Up 2000* 16
Individual State Analysis: The Example of New Mexico 24

About the Author 38
About the National Center for Public Policy and Higher Education 39

Foreword

Since the release of *Measuring Up 2000: The State-by-State Report Card for Higher Education*, in November 2000, the National Center for Public Policy and Higher Education has commissioned a number of studies designed to test relationships among and between the performance categories in the report card. The first of these tests was conducted by Peter Ewell of the National Center for Higher Education Management Systems (NCHEMS), resulting in a Center publication, *A Review of Tests Performed on the Data in Measuring Up 2000*, published in June 2001.

This publication, *Supplementary Analysis for Measuring Up 2000: An Exploratory Report*, builds upon that work. Mario Martinez, assistant professor in educational management and development at New Mexico State University, explores the relationships within and between performance categories. A related study, *Beneath the Surface*, prepared by Alisa Cunningham and Jane Wellman, and commissioned by the National Center, seeks to better understand the "drivers" of performance used in *Measuring Up 2000*.

The National Center is grateful for the contributions made in this report and welcomes the responses of readers.

Joni Finney
Vice President
The National Center for Public Policy and Higher Education

Executive Summary

This report was created to generate ideas about the kinds of data that might be used to produce follow-up analyses of *Measuring Up 2000: The State-by-State Report Card for Higher Education*. The analysis attempts to represent report card data and related information graphically and mathematically in ways that might be useful to policymakers and higher education stakeholders who wish to understand national, regional, and ultimately state performance in higher education. The report intentionally moves from broad national and regional analysis to specific state analysis. For this reason, the analysis begins by depicting the grades in *Measuring Up 2000* by region in tabular and graphical form. This introductory section is intended to be simple, displaying the data in ways that allow for comparison across regions by report card category.

The second section is more detailed and utilizes ratio analysis as a technique to interpret one grade relative to another. The goal is not to determine which components of analysis are worthy of further pursuit, but rather to create a starting point from which to initiate dialogue and analysis about additional supplementary report card information. The third section looks at two common state inputs to higher education: state appropriations and student aid. These inputs are analyzed within the context of the state grades in *Measuring Up 2000*.

The final section analyzes a sample state, New Mexico, using the preceding analyses. Several states have expressed interest in addressing their report card performance, so this section attempts to draw on the analytical ideas derived throughout the report to arrive at some policy recommendations for the sample state. The purpose of this section is to generate discussion about the type of information the National Center might provide in order to offer states guidance for report card improvement.

As the National Center continues to work on issues of affordability and to pursue ideas about individual state commentary, it is possible that some of the analysis contained in this report might further inform the work currently being done. Another possibility is that this exploratory report may be the springboard for additional ideas to help states improve higher education performance.

Finally, the information and analysis contained in this report expresses the sole work and interpretation of the author.

Introduction

This report proposes data analysis to supplement *Measuring Up 2000: The State-by-State Report Card for Higher Education*.[1] The approach taken throughout this report is to combine report card data in different ways graphically and mathematically to reveal illuminating "views" of the data. The purpose is to generate ideas, not provide a final analysis. As a result, the reader may determine that certain analyses may be more useful than others.

The focus of this report is ultimately the states. However, national and regional data have been included as important components of the analysis so that states may develop a relative perspective of their performance.

Any single graphic, ratio, or grade by itself may contain a degree of ambiguity or be subject to multiple interpretations. Therefore, any assumptions in this report regarding data analysis and presentation are explained in the text itself, or the reader will be explicitly directed to an appendix. State groupings for regional analysis are based on the groupings used by the Western Interstate Commission for Higher Education, but other variations of these groupings could be created easily. In addition, the design of this report uses the state of New Mexico as its sample state for analysis in Section IV.

The analysis for this exploratory work was guided by two overarching questions: (1) How can the data be depicted to give a comparative yet specific view of state and regional performance? (2) How can the data be mathematically combined in a simple fashion to generate additional insight into state and regional performance?

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[1] The National Center for Public Policy and Higher Education (San Jose: 2000).

Section I

A National Look at Regional Grade Averages

The logical place to begin a supplementary analysis of *Measuring Up 2000* is to give a broad perspective of the data. The report card shows individual state performance; this analysis starts by summarizing regional and national averages by report card category. Table 1 shows the report card grade averages by region. State regional classifications are listed in Appendix A. These regional classifications are used by the Western Interstate Commission for Higher Education, and can be referenced in their publication, *Knocking at the College Door*. The national average for all states is also shown in Table 1.

Table 1

Measuring Up 2000 Grade Averages by Region

	Preparation	*Participation*	*Affordability*	*Completion*	*Benefits*	*Total Average*
Northcentral	82	83	79	83	80	81
Northeast	86	85	64	91	88	83
South	70	66	75	77	71	72
West	76	74	79	70	82	76
National	**78**	**76**	**74**	**80**	**80**	**78**

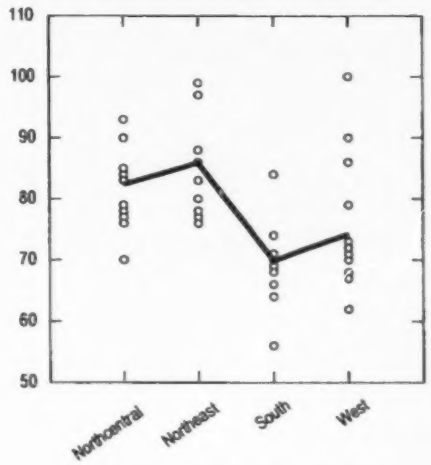
The Northeast has the highest average total for all report card grades, but the Northcentral region is clearly the most balanced region in terms of higher education performance across report card categories. In every category, the Northcentral region's performance is equal to or above the national average. The Northeastern region substantially outperforms the national average on every category except affordability. In this area, it substantially underperforms.

The Southern and Western regions fall below the total national average, though each outperforms the national average in at least one area. Affordability in the South and West are above the national average. The Western region also outperforms the national average on benefits.

The tabular results of report card averages allow some questions to surface, since regional and national averages can be seen simultaneously. The ideal position seems to be that held by the Northcentral region, while every other region has significant performance weaknesses in comparison to the national averages. This

raises some important questions that further data analysis may be able to inform: Is there wide variation within regions? What are the relationships between specific report card categories? Does examination of a relationship between report card categories inform policy alternatives? Are there tradeoffs between grades? To begin examining these questions, a graphical presentation of regional data concludes this section. Subsequent sections provide further insight.

Figure 1
State Scores on Preparation, by Region



Line connects mean values for each region.

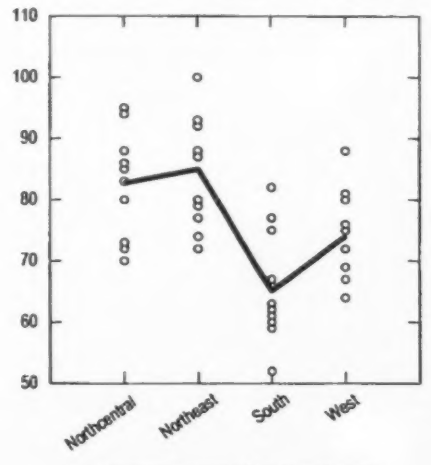
A Graphical Look at Regional Data

Preparation

Measuring Up 2000 gives national graphical data on the five report card categories utilizing color codes and a U.S. map to display state grades by category (pp. 18–23). Figure 1 presented here displays in graph form all state preparation grades—in the form of index scores—by region. The line in Figure 1 connects the mean values of each region. The graphic is not intended to communicate specific state grades but rather trends, variations, and comparisons among and between regions. The graphic also has the advantage of displaying the grade dispersion by region. Abbreviations could easily be inserted into the graphic so that each data point contains an associated state, but then the graphic becomes rather cluttered. Section IV will highlight specific state placement and comparisons to national and regional results.

The Northeastern and Northcentral states have higher preparation scores on average than the Southern and Western states. Northeastern and Northcentral states also show less variation in preparation scores than the Southern and Western regions. In the Western region, for example, the state of Utah earned a score of 100 on preparation while New Mexico earned a 62 (a 38 point difference). A separate line connecting the median values would have looked very similar to the line connecting mean values in Figure 1, but the entire line would have shifted downward slightly.

Figure 2
State Scores on Participation, by Region



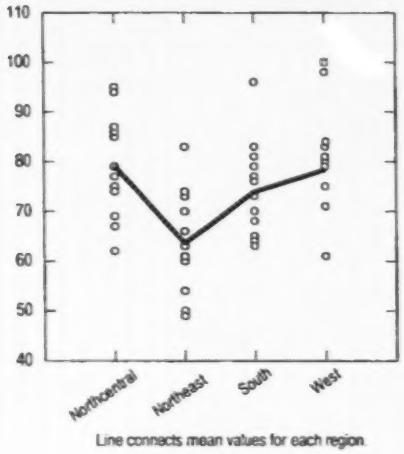
Line connects mean values for each region.

Participation

The average scores on participation by region closely follow the pattern for preparation. On average, the Northeast region has the highest participation rates in the nation, followed closely by the Northcentral region. Only three Southern states received participation grades above a C– or score of 70 (see Figure 2).

Figure 3

State Scores on Affordability, by Region



Line connects mean values for each region.

Affordability

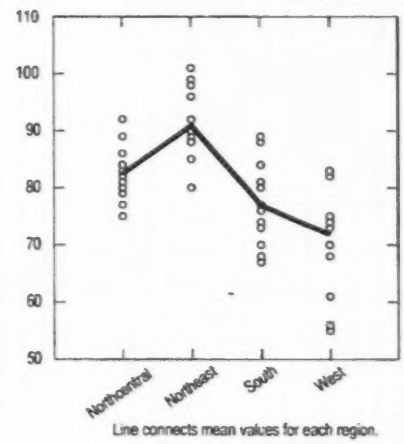
Figure 3 reveals wide variation in affordability scores within individual regions. In the Western region, there was a 39 point difference between the top performing state, California, and the lowest performing states, Montana and Oregon. Affordability was the only report card category for which the Northeastern region fell below the national average.

Completion

In Figure 4, we see that on average, the Northeast region has the highest completion rates in the nation, followed by the Northcentral region. This was similarly the case for preparation and participation. The Southern region has a higher completion average than the Western region, largely because two Western states fell below 60.

Figure 4

State Scores on Completion, by Region



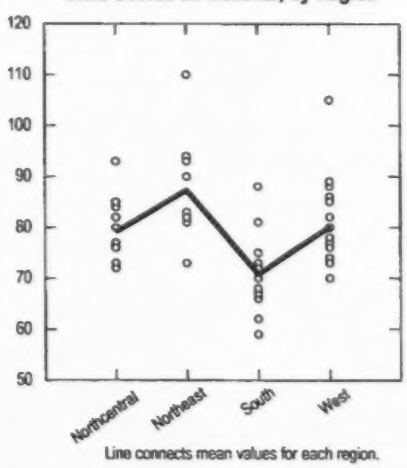
Line connects mean values for each region.

Benefits

Figure 5 indicates that the Western region derived more benefits from higher education than any other region other than the Northeast. Also, benefits scores varied widely within regions. Within the Northeast, for instance, Maryland scored 110 while Maine scored only 73. As with most other report card categories, the Northcentral states showed the least amount of variation and, as a region, once again scored above the national average.

Figure 5

State Scores on Benefits, by Region



Line connects mean values for each region.

Section II

Report Card Ratios and Regional Average Analysis

This section presents a ratio analysis, and the resulting ratio averages are shown by region and for the nation. Ratio analysis is a common evaluation strategy employed by private industry. Halstead has long used ratio analysis to present interpretations of state higher education financing data.

A ratio, by definition, has a numerator and a denominator. If the numerator is itself a ratio, or if the denominator by itself is a ratio, then interpretation of the ratio that combines numerator and denominator becomes more complex and may increase the probability of ambiguity in interpretation. Such ratios may also provide greater insight, however. Many of Halstead's measures combine state appropriations data with demographic factors, which makes interpretation reasonably straightforward.

The convention in the ratio analysis in this section is to combine two *Measuring Up 2000* report card categories. In all of these ratios, the numerator can be thought of as the "output" and the denominator as the "input." In financial ratio analysis, the combination output/input equates to an efficiency measure. In this analysis, we might think of the ratios in general terms, such as: what is the result of the numerator, given the denominator? Using a specific example from the analysis: what is the participation result, given the preparation level of the region? Each ratio follows this convention.

A total of six ratios are presented for consideration in this section. The common denominator for the first two ratios is the category of preparation. For both these ratios, the numerator and denominator were significantly correlated, as shown in Appendix B, which presents correlations between the performance categories in *Measuring Up 2000*. This was not the overriding reason why the ratio was constructed, however. There is no indication in previous higher education ratio analyses that the prerequisite for constructing a ratio was that the numerator and denominator were correlated. Every ratio in this section was constructed because I thought it might be interesting to consider how one report card category behaved relative to another. If there are reasonable interpretations for a ratio, I offer them as suggestions for consideration.

The third and fourth ratios have affordability as the common denominator. The categories for these ratios were not significantly correlated, but since affordability has been of crucial interest to the National Center, it is still valuable to present these

ratios. The fifth and sixth ratios use benefits as a common numerator, and thus ask the question, "What is the expected level of benefit given another factor such as participation?" Benefits were significantly correlated to participation, as shown in Appendix B.

The purpose of the ratios is to provide insight and direction for performance improvement. A ratio allows a look at two categories in relation to each other. No single ratio is perfect, but with the proper precautions, ratios can provide direction and serve as a useful discussion reference for states, as leaders consider specific reasons for their higher education performance and possible strategies for improvement.

The ratios for each of the four regions are given in this section, along with the national average. The national average is used as the basis for comparison for both regional and state analyses. Thus, all regional results are interpreted relative to the national average. Individual state ratio calculations are given at the end of this section.

Ratio Analysis: Preparation

Table 2 presents the results for the first two ratios for this section, and the definition and interpretation of each ratio in Table 2 is as follows.

Participation/Preparation: The extent to which prepared students are entering college.

If Participation/Preparation = .97: All who are prepared are participating.
If Participation/Preparation < .97: Not all who are prepared are participating.
If Participation/Preparation > .97: Not all who participate are prepared.

Note: These interpretations are relative to the national average.

Table 2

Preparation Ratio Analysis: Averages by Region		
	Participation/ Preparation	***Completion/ Preparation***
Northcentral	1.00	1.00
Northeast	.99	1.05
South	.94	1.11
West	.97	.92
National	**.97**	**1.02**

This measure is an indication of how well a state provides postsecondary opportunity based on college readiness. A state or region may have accessible higher education opportunities and high participation rates, yet preparation to take full advantage of that opportunity may be lacking.

The value of .97 is the national average: All regional results are interpreted relative to the national average. A region with a value of less than .97 would indicate some barriers to participation compared to the national average, because not all who are prepared are participating. A value of more than .97

indicates that the state's higher education system may likely confront some challenges, because not all students who actually enter college are prepared.

In Table 2, the Western region falls right at the national average. The Western region, by the national standard, is allowing all who are prepared to participate in college. The Northeast and Northcentral regions have a value greater than .97, which would indicate that these regions are actually allowing more to participate than are prepared. The Southern region is the sole region that is not making participation opportunities available to all who are prepared, relative to national standards. Since Southern region states would receive credit on their participation grades for high school freshmen who attend college anywhere, and because the region's preparation grades are higher than its participation grades, it is indeed possible that prepared students are not participating in college.

The regional results for the ratio analysis are intended to be broad. Like the individual report card grades, the ratio results raise questions and should stimulate additional analysis and investigation where appropriate. Factors not mentioned here may be influencing results, and additional analysis may provide insight and guidance. For example, we would want to ask: what are the likely reasons a given region is obtaining its particular ratio results? It may be that select age groups from outside a given region or state are disproportionately participating in postsecondary education in these regions. This would mean that the state's participation rate would be somewhat inflated relative to in-state student participation. In this case, migration rates may be disproportionately influencing regional or state results. These regional findings also may be compared to perceptions generally associated with certain regions, either to refute or confirm such perceptions. Perhaps policymakers wish to refute a claim that higher education participation in the Northeastern region is selective. The Northeastern region's performance on preparation, participation, and participation/preparation relative to the national averages might help refute such a claim.

The ratios should be viewed within the context of the individual grades that comprise the ratio. The two components of the participation/preparation ratio are the individual grades for participation and preparation. In addition, the ratio and the individual grades should be compared to national performance. It is possible that a state is allowing all who are prepared to participate, but the level of preparation is comparatively low and so is participation. Thus, the individual ratio value for the region or state would be equal to or greater than the national average of .97, indicating that the region or state is providing opportunity for all who are prepared, but the actual level of preparation and participation are low.

As with any measure, this ratio should not be perceived as an absolute that can stand on its own. It can, however, give a general sense of how well a region or state provides opportunity to those who are prepared for college. Pursuing this ratio (or the

others that will be explained) is useful insofar as it adds insight that regions or states may find valuable as they seek to improve performance and construct policy.

Completion/Preparation: A measure of the value added by postsecondary institutions

If Completion/Preparation = 1.02: All who are prepared are completing.
If Completion/Preparation < 1.02: Prepared students are not completing.
If Completion/Preparation > 1.02: High value added—even those who are not prepared are completing.

Note: These interpretations are relative to the national average.

The value of 1.02 is the national average; again, all regional results in Table 2 are interpreted relative to the national average. A region with a value of 1.02 indicates, in general, that all those in the region who are prepared are persisting and completing. A value of less than 1.02 would indicate that even prepared students are not completing. A value of more than 1.02 would indicate that the state's higher education system is able to complete more students than are prepared. The initial interpretation of this last case is that the higher education system is somehow able to convert unprepared students into "completers."

By this measure, the Northcentral and Western regions are not able to complete all those students who are prepared for higher education. Higher education institutions and systems in these regions have a lower than expected completion rate, given the level of preparedness of their potential student base. The Northeastern and Southern regions are adding value, because the completion rates are higher than the preparation rates. These regions and their associated ratio values outline the need for further analysis, however, because the ratio could be subject to alternative interpretation. This analysis assumes, given the categories in the report card, that if a state has a high completion grade but a low preparation grade, then the higher education sector is "adding value." That is, higher education is apparently successful in transforming students who are not prepared into college graduates. However, an opposite and critical perspective could also be forwarded. One could argue that unprepared students are advancing through the state's higher education system because the system does not have proper academic rigor and standards in place. Perhaps a more compelling alternative is that completion rates must be considered relative to both participation and preparation levels. What if state residents (both prepared and unprepared) are not participating in postsecondary opportunities? This ratio cannot alone answer such a counterpoint and so should be looked at in conjunction with the first ratio in this section.

Southern Region

To tease out the results and address possible alternate explanations for this ratio, consider the Southern region. The Southern region is, upon first glance, completing a large number of students relative to its preparation level. But to ascertain whether this is happening because higher education is adding value or because students in that region are being left out, the measure should be looked at in comparison with the previous measure, and along with the individual *Measuring Up 2000* report card category average of participation for the region, as shown below.

If Participation/Preparation = .94: Not all who are prepared are participating.
If Completion/Preparation = 1.11: High value added—even those who are not prepared are completing.
Participation Average Grade (Index Score): 66

Note: These interpretations are relative to the national average.

From this combined evidence, we can reasonably conclude that the Southern region scores high on the completion/preparation ratio because participation appears selective. From the first ratio (participation/preparation), even prepared students are not participating. In addition, the Southern region's participation grade score is a dismal 66. It is highly likely that if prepared students are not participating, then the higher education system is also not working with unprepared students. The concern may then be whether prepared and unprepared residents are being left out. After conducting a regional analysis of net migration rates, based on data in *Measuring Up 2000* (in the state profiles section), I found that the Southern region has the highest positive net migration of students (35,332), more than double any other region. This may be additional evidence that prepared and unprepared residents in Southern states are being left out of higher educational opportunities. The ratio results, along with the migration statistics (if they are correct), indicate that Southern states are enrolling a number of out-of-state students, perhaps at the expense of in-state residents. (Note: the net migration of students for all states was summed and yielded a large positive number. This means the data makes assumptions that I was not aware of or that it may have some shortcomings.)

In contrast to the South, the Northeast's individual performance on participation and preparation are nearly identical to or higher than the national average. The completion/preparation ratio—along with the other ratios, individual category grades, and additional statistics—points out the advantages of looking a level deeper at an individual region or state on the basis of multiple pieces of information.

RATIO ANALYSIS: AFFORDABILITY

The ratios in Table 3 have affordability as a common denominator. These ratios ask: what level of participation or completion should a region expect, given its level of affordability?

Participation/Affordability: A measure of participation given affordability levels.

If Participation/Affordability = 1.02: Participation is what we expect, given affordability levels.
If Participation/Affordability > 1.02: Participation is higher than expected, given affordability levels.
If Participation/Affordability < 1.02: Participation is lower than expected, given affordability levels.

Note: These interpretations are relative to the national average.

This measure compares participation to affordability. This analysis is done at a regional level using state-level data, so it cannot speak to how affordability may be affecting the participation levels for different income or ethnic groups. Thus, more analysis using outside data may help states that wish to address such issues.

Table 3

Affordability Ratio Analysis: Averages by Region		
	Participation/ Affordability	***Completion/ Affordability***
Northcentral	1.04	1.04
Northeast	1.33	1.42
South	.88	1.04
West	.94	.89
National	**1.02**	**1.07**

The baseline measure of comparison is the national average of 1.02. By this ratio, three of the four regions were at extremes. Only the Northcentral region was close to the national average and maintaining the participation levels we would expect, given affordability. The Southern and Western states are not maintaining the participation levels that we might expect, even though postsecondary opportunities are relatively affordable in these regions. The Northeast region maintains a very high level of participation, despite being unaffordable by national standards.

Simultaneously examining an individual affordability grade with the participation/affordability ratio can help states understand where attention should be focused. The Western region does well on affordability, for example, but participation is lower than expected given affordability levels. A logical recommendation would be for the region to hold affordability constant and focus on improving participation. Thus, the appropriate point of focus for improving the participation/affordability ratio is not in the denominator, but in the numerator.

Additional data within *Measuring Up 2000* was analyzed to search for clues regarding the extreme results in three of the four regions. One impression may be that the Northeast may have higher educational achievement levels than other regions, and this positively impacts the expectation of postsecondary participation, despite affordability. According to the benefits subcategory "Population aged 25–65 with a

bachelor's degree or higher," the Northeastern region's average educational achievement level, at 30.3, is higher than any other region, and higher than the national average of 26.0. The Southern region has the lowest achievement level, at 22.5. The Northeastern region's income per capita of $31,632 is also substantially higher than the national average of $27,255 and—given the strong correlation between income and participation—surely contributes to the ratio result for the region. The Southern region's income per capita of $24,410 is well below the national average. Although contextual factors should not be used as a primary explanation for report card or ratio performance, they can help set the backdrop for forwarding realistic policy recommendations. The sample state analysis of New Mexico in the last section of this report will provide an example of how the ratios used in this section can be combined with contextual information from a particular state to forward explanations and policy recommendations for improvement.

Completion/Affordability: A measure of completion rates given affordability levels.

If Completion/Affordability = 1.07: Completion is what we expect, given affordability levels.
If Completion/Affordability > 1.07: Completion is higher than expected, given affordability levels.
If Completion/Affordability < 1.07: Completion is lower than expected, given affordability levels.

Note: These interpretations are relative to the national average.

This ratio compares completion levels to affordability (see Table 3). The baseline measure of comparison is the national average of 1.07. Once again, the Northeast region maintains high levels of completion despite low affordability. The other three regions fall below the national average and are not maintaining the expected completion levels, given their levels of affordability. The Western region, in particular, is noticeably lagging on this ratio, because it is the most affordable region in the nation but last in completion.

As with the previous ratio, individual average regional grades and contextual information should be examined in tandem with the completion/affordability ratio. This is particularly useful for a ratio that yields extreme results, such as completion/affordability. Such an analysis should be done not just to explain and rationalize current performance, but in the spirit of understanding state conditions and higher education results (from individual grades as well as ratios) so that practical recommendations can be forwarded to improve performance.

RATIO ANALYSIS: BENEFITS

The ratios in Table 4 have benefits as a common numerator.

Benefits/Participation: A measure of societal benefits derived from college participation.

If Benefits/Participation = 1.05: Deriving expected benefits, given participation levels.
If Benefits/Participation < 1.05: Lower benefits than expected, given participation levels.
If Benefits/Participation > 1.05: Higher benefits than expected, given participation levels.

Note: These interpretations are relative to the national average.

This ratio assumes that there is societal benefit to college participation. An engrained assumption I make is that states or regions that approach "full" participation may experience diminishing benefit returns. This means that in theory, the first college participant yields the highest marginal benefit. Each additional participant, in theory, does not add as much benefit to the total. Thus, regions/states with low participation rates would derive great benefit from those who do participate, yielding a high ratio value. This is also an indication, though, that the region needs to improve participation rates. Ratio values below the national average would indicate that the region/state is experiencing diminishing returns. But values significantly below the national average might indicate that higher education, from a state level, is not producing the benefits one might expect for those who participate.

Table 4

Benefits Ratio Analysis: Averages by Region		
	Benefits/ Participation	***Benefits/ Completion***
Northcentral	.96	.96
Northeast	1.04	.97
South	1.09	.92
West	1.10	1.16
National	**1.05**	**1.00**

The baseline measure of comparison, as with the previous two ratios, is the national average of 1.05. Thus, the Southern and Western regions are deriving greater benefits from their participation levels. The Northeastern region falls slightly below the national average by this measure, but it still maintains fairly high benefits given its high participation levels. The Northcentral region falls well below the national average and is not deriving the benefits one might expect. This may be due to diminishing returns since participation is strong, but the Northeastern region has even better performance on participation and the benefits/participation ratio. Another possibility is that college participants in the Northcentral region don't reside in that region long enough to manifest state benefits. That is, they depart from the region sometime after initial matriculation or completion, and their contribution to economic benefits, educational achievement, civic benefits, or literacy skills are counted in another region.

Benefits/Completion: A measure of societal benefits derived from college completion.

If Benefits/Completion = 1.00: Deriving expected benefits, given completion levels.
If Benefits/Completion < 1.00: Lower benefits than expected, given completion levels.
If Benefits/Completion > 1.00: Higher benefits than expected, given completion levels.

Note: These interpretations are relative to the national average.

This ratio assumes that there is societal benefit to college completion. Again, an engrained assumption I make is that states or regions that have higher participation rates may experience diminishing benefit returns. This means, that in theory, the first college graduate yields the highest marginal benefit, and each additional graduate, in theory, does not add as much benefit to the total. Thus, regions/states with low completion rates would derive great benefit from those who do complete, yielding a high ratio value. This is also an indication, though, that the region needs to improve completion rates. Ratio values below the national average would indicate that the region/state is experiencing diminishing returns. But values significantly below the national average might indicate that higher education, from a state level, is not producing the benefits one might expect for those who complete.

The baseline measure of comparison here is the national average of 1.00. Thus, the Western region is deriving great benefits from those who do complete. The problem is that completion rates are very low for this region and need to be improved. For the Western region, the benefits/completion ratio is much too high, and the goal should be to move this ratio closer to the national average. All the other regions fall below the baseline measure. There are several explanations for this. First, it is likely that the Northcentral and Northeastern regions are experiencing diminishing returns for each additional completer since their completion scores are quite high. It is also possible that these states graduate students, but the students don't reside in the region long enough to manifest state benefits. That is, students depart from the region sometime after completion and their contribution to economic benefits, educational achievement, civic benefits, or literacy skills are counted in another region.

The Southern region also has the lowest ratio value by this measure. The Southern region may also be experiencing a low ratio value for the two reasons mentioned for the Northcentral and Northeastern regions. An additional alternative is that higher education systems and institutions in this region are not producing the benefits one might expect from its completers. This possibility also surfaces when one considers the individual (average) completion and benefits grades from the Southern region (77 and 71, respectively) against the national averages for these

same grades (80 and 80, respectively). Of particular note is the difference between Southern regional benefits and the national average.

COMPLETE STATE RATIOS

Table 5 presents all ratio calculations for all 50 states, by region.

Table 5

Individual State Ratio Calculations, by Region							
	State	*Part./Prep.*	*Comp./Prep.*	*Ben./Part.*	*Part./Aff.*	*Ben./Comp.*	*Comp./Aff.*
Northcentral	IA	0.99	1.10	0.93	0.98	0.84	1.08
	IL	1.02	0.85	0.86	1.00	1.04	0.83
	IN	1.00	1.17	1.04	0.89	0.89	1.04
	KS	1.13	1.00	0.89	1.09	1.01	0.97
	MI	1.04	0.91	0.97	1.17	1.10	1.03
	MN	1.03	1.14	1.16	0.85	1.04	0.95
	MO	0.94	1.04	1.06	1.04	0.95	1.16
	ND	1.02	1.04	0.91	1.15	0.90	1.16
	NE	1.04	0.83	0.85	1.22	1.07	0.97
	OH	0.91	1.05	1.06	1.16	0.92	1.34
	SD	0.96	1.07	0.99	1.09	0.89	1.21
	WI	0.96	0.93	0.93	0.99	0.95	0.97
South	AL	1.38	1.45	0.97	1.18	0.93	1.25
	AR	0.94	1.05	1.03	0.78	0.93	0.87
	FL	0.91	1.19	1.04	1.05	0.80	1.38
	GA	0.76	1.18	1.40	0.76	0.91	1.18
	KY	0.85	0.95	1.05	0.76	0.94	0.84
	LA	1.05	1.32	1.14	0.84	0.91	1.06
	MS	0.94	1.17	1.21	0.78	0.97	0.97
	NC	0.79	1.06	1.02	0.69	0.75	0.93
	OK	1.09	1.01	0.96	0.93	1.03	0.86
	SC	0.87	1.20	1.33	0.84	0.96	1.15
	TN	0.85	1.03	1.13	0.82	0.93	1.00
	TX	0.89	0.92	1.14	0.87	1.10	0.89
	VA	0.98	1.00	1.07	1.08	1.05	1.11
	WV	0.99	1.12	0.88	1.06	0.78	1.21
West	AK	0.77	0.61	1.25	0.92	1.56	0.73
	AZ	1.12	1.04	1.07	1.06	1.14	0.99
	CA	1.26	1.04	1.00	0.88	1.21	0.73
	CO	0.93	0.87	1.31	0.99	1.40	0.93
	HI	1.11	1.00	0.95	1.14	1.05	1.03
	ID	0.94	1.07	1.16	0.80	1.01	0.91
	MT	0.78	0.85	1.27	1.10	1.16	1.20
	NM	1.31	0.98	0.94	0.96	1.25	0.73
	NV	1.00	0.84	1.04	0.81	1.25	0.67
	OR	0.90	1.04	1.22	1.05	1.05	1.21
	UT	0.76	0.68	1.08	0.78	1.21	0.69
	WA	0.91	1.04	1.24	0.89	1.09	1.01
	WY	1.11	1.15	0.91	1.01	0.88	1.05
Northeast	CT	0.91	0.92	1.07	1.21	1.06	1.22
	DE	1.30	1.10	0.93	1.43	1.09	1.21
	MA	0.93	0.93	0.98	1.46	0.98	1.46
	MD	1.06	0.91	1.18	1.41	1.38	1.21
	ME	0.88	1.00	0.95	1.43	0.83	1.63
	NH	0.92	1.17	1.03	1.58	0.80	2.02
	NJ	0.90	0.82	1.07	1.05	1.16	0.96
	NY	0.96	1.08	1.04	1.33	0.92	1.50
	PA	0.95	1.27	1.09	1.00	0.82	1.34
	RI	1.22	1.29	1.00	1.90	0.95	2.00
	VT	0.90	1.20	1.14	1.18	0.85	1.57

Section III

A National Look at State Input Effects on the Grades in *Measuring Up 2000*

Two areas of investment in higher education that are at the discretion of states are appropriations to higher education and state student aid. For the purposes of this section, these two areas are thought of as the "levers" of state investment. They are also two areas of input around which much state policy discussion revolves. The intent of this section is to investigate patterns and trends in *Measuring Up 2000* state grades according to the varying degrees of higher education investment. Numerous studies offer useful commentary on the relationship between student aid and participation or appropriation levels and enrollment, but this section analyzes the relationship of appropriations and student aid to *Measuring Up 2000* grade data only.

To better capture comparative data, state investments were characterized in two steps. First, rather than using total appropriations to higher education and total student aid by state, the analysis uses appropriations per student and student aid per student. This eliminates wide variations in state investment data due to differences in magnitude of actual dollar amounts. It also provides a better basis for relative comparison, since the dollar amount is divided by a common demographic factor. Second, states were not grouped together by region, but by quintile according to the degree of investment per student. Thus, the ten states with the highest level of student aid per student were ranked in the first quintile, the next ten states with the second highest level of student aid per student were ranked in the second quintile, and so on. The same procedure was followed for appropriations per student. For reference purposes, state groupings by quintile for student aid per student and appropriations per student are shown in Appendix C.

In this section, analysis is included only where state input in relation to a specific report card category produced a statistically significant relationship. The complete correlations between appropriations per student and all report card categories, and between student aid per student and all report card categories, are shown in Appendix D.

The first graphics in this section are between the state inputs and the completion category only. This is because completion was the only category that yielded significance in relation to both state inputs. Important observations about each graphic are highlighted. However, these suggestions and explanations only reflect the

author's interpretation of the data. The more important purpose of the suggestions and explanations is to encourage discussion about the usefulness and merit of using such a graphic as a supplement to the report card. Would such information provide insight for states trying to improve their grades?

Data Sources for this Section

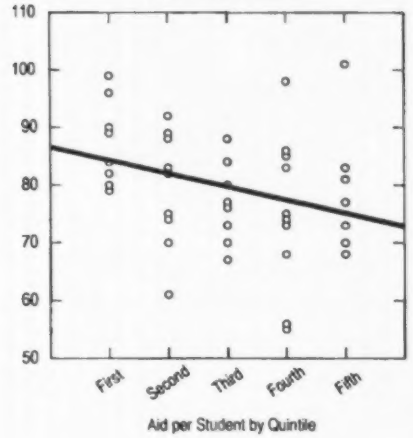
Each section of this exploratory report was intended to create discussion to help advance ideas that might be useful for a supplement to the report card. Thus, the overall purpose of this section is to analyze the value of comparing state appropriations and state student aid data to the results in *Measuring Up 2000*. Nationally available data was used as a starting point for this exploration, and hence broad state-level indicators often contain assumptions that must be further scrutinized. State appropriations and state student aid data are for 1999–2000 and 1998–1999, respectively. The data source is the *Chronicle of Higher Education Almanac*, 2000–2001 issue. According to the *Chronicle*, state appropriations figures are from Illinois State University and include state tax funds appropriated for colleges and universities, but do not include capital outlays and money from other sources, such as appropriations from local governments. This exclusion of local money must be noted, since the broad state-level analysis in this section combines state appropriations with report card grades. Participation, affordability and completion all contain subcategories that include community colleges, yet the state appropriations data is missing an important funding component for community colleges.

This analysis, then, speaks only to state investments and the results (according to report card performance) a state obtains because of those investments. Local investments are unquestionably influential in performance, however, particularly in states with large community college systems. The effect of this local investment is not captured in this analysis, but with further work the analysis could be refined to combine state and local investment.

COMPLETION GRADES BY STATE STUDENT AID PER STUDENT

Figure 6 displays, graphically, all state completion grades in relation to quintile by level of student aid per student, with the ten states investing the highest amount of state aid per student falling in the first quintile, and so forth. (See Appendix C for a listing of states by quintile category.) Figure 6 is not intended to communicate specific state grades but rather trends, variations and comparisons among and between quintile groups. The graphic also has the advantage of displaying the grade dispersion by quintile. The level of a state's investment in student aid per student

Figure 6
State Scores on Completion, by Aid per Student



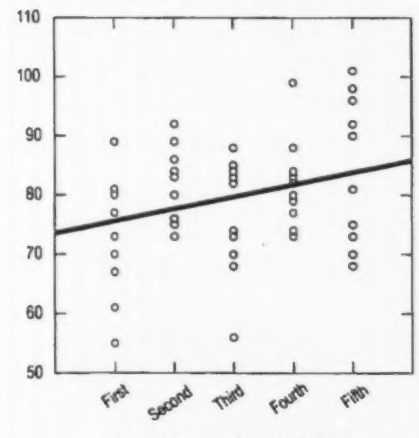
showed a significant positive correlation with completion grades (Appendix D), and the trend line shown in Figure 6 is consistent with the correlation results. State investment in student aid per student did not yield any other significant correlation with the other four state higher education graded categories.

The trend line shown in Figure 6 displays the general pattern of student aid investment to report card completion. In general, states that invest heavily in student aid performed better on the completion category than states with lower investments. Northeastern states were disproportionately represented in the first quintile in Figure 6, and Western states were disproportionately represented in the fifth quintile. The lowest grade for any state appearing in the first quintile in Figure 6 was a C+, Illinois (index score 79), but New Hampshire, a Northeastern state, received an A (101) despite being in the fifth quintile in state aid per student. Utah received the lowest grade (D+, or 68) of all states appearing in the fifth quintile in Figure 6.

COMPLETION GRADES BY STATE APPROPRIATIONS PER STUDENT

Figure 7 displays the general pattern of higher education appropriations per student to report card completion for all 50 states. This correlation was significant. The relationship between appropriation level and completion grade would seem counterintuitive. In general, states that appropriate greater amounts per student fare worse on the completion category than states with lower investments. Interestingly, the report card categories affordability and completion are also negatively correlated.

Figure 7
State Scores on Completion, by Appropriations per Student



Regional differences in Figure 7 (and Appendix C) are prominent, however. Five of the states that appropriate the lowest amount per student to higher education (in the fifth quintile) in Figure 7 are Northeastern states, and all of those states received an A grade in completion (90–101). Five Southern states appeared in the first quintile, and those states had varying grades. Three Western states were in the first quintile, with completion grades of C, D–, and F. These observations may also hint at underlying state philosophies regarding how higher education should be funded. More analysis and qualitative context on an individual state basis would more solidly ground such observations to help policymakers better understand their state's performance.

COMBINING STATE STUDENT AID AND APPROPRIATIONS

Student aid and appropriations data were also analyzed together. Table 6 shows those states that appeared in the first quintile in both student aid and higher education appropriations, and those states that appeared in the fifth quintile in both student aid and higher education appropriations. States that ranked in the first quintile in one grouping but the fifth in the other are also displayed. The corresponding completion grades for each state also are given in Table 6.

Table 6

Completion Grades Compared to State Student Aid and Appropriations

State	Region	Grade	1st Quintile: Aid and Approp.	5th Quintile: Aid and Approp.	1st Quintile: Aid; 5th Quintile: Approp.	1st Quintile: Approp.; 5th Quintile: Aid
GA	South	B– (80)	X			
NC	South	B+ (89)	X			
MT	West	C (73)		X		
NH	Northeast	A (101)		X		
UT	West	D+ (68)		X		
AZ	West	C– (70)		X		
SD	Northcentral	B– (81)		X		
NY	Northeast	A– (90)			X	
VT	Northeast	A (96)			X	
MS	South	C+ (77)				X
HI	West	C (73)				X
AL	South	B– (81)				X

The completion results in Table 6 may be influenced by regional differences or individual state outliers, but some general interpretations still surface from Figures 6 and 7, Table 5, and Appendix C. Two Southern states appeared in the first quintile in both student aid and higher education appropriations per student. These states maintained very respectable completion grades by investing generously both in students and directly in higher education. With the exception of New Hampshire, a Northeastern state, states that fell in the fifth quintile in aid and appropriations had mediocre results. Three of the five states that fell in this category were Western states, and the highest grade obtained by one of these Western states was a C (73).

The two states that were in the first quintile in aid but in the fifth quintile for appropriations received A's, and both were Northeastern states. Two Southern and one Western state heavily invested in appropriations but were in the fifth quintile for student aid. On the whole, these states maintained slightly better than average results.

Some general observations can be drawn from this analysis. First, those states that appeared in the first quintile in student aid investment did well, regardless of

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appropriations quintile placement. Only one state in the first quintile for student aid (Illinois) received a C+ for completion; the remainder received a B– or higher. The results in Table 6 regarding those states that invest heavily in student aid coincide with the correlation analysis. This suggests that the level of student aid per student is very important in directly improving completion rates.

From Table 6 and Appendix C, it appears that low levels of appropriations do not doom a state to a low completion grade, nor do high levels of appropriations guarantee a high grade. That states in the top quintile listed in Table 6 in appropriations per student did obtain slightly better than average completion grades somewhat contradicts the correlation results, but it does provide anecdotal evidence that strong investment helps completion. These results may be because select states from the first quintile group are represented in Table 6, however. The entire first quintile group for appropriations (in Appendix C) does show wide variation in completion grades, with many states scoring in the D (60s) range.

Many factors influence how much a state invests in appropriations and/or student aid. For example, the obvious importance of private institutions in the Northeastern region of the United States is part of the context that must be taken into consideration when discussing different policy strategies that might influence completion. To that end, however, a general conclusion for the nation as a whole might be that high levels of student aid provide more leverage to increase one's completion rate than do high levels of higher education appropriations per student.

To ensure that these observations are within reason, a correlation analysis was also performed between the two state inputs (aid and appropriations) and all regions excluding the Northeast (Appendix D). (Another correlation analysis was conducted between the two state inputs and one region, the West [also in Appendix D], because this is the region of the sample state, New Mexico.)

These additional analyses were performed because if any of the results showed significance, and the nature of that significance was different from the correlation analysis that included all regions, then any interpretations should be accompanied with extreme caution. Such a case would be an indicator that regional data were disproportionately influencing national data analysis.

It is still advisable to take caution in making broad interpretations of the data, but the additional correlation analyses did not yield any results that contradicted the analyses that included all regions. The correlation analysis for the Western region produced no significance, perhaps because of the reduced number of observations, which in turn would have had to yield a much stronger connection between the report card grades and state inputs to yield a significant result.

INCLUDING AFFORDABILITY AND PARTICIPATION

The relationships and differences between affordability, student aid, and appropriations are of central importance. First, high investment in student aid per student does not guarantee affordability. According to the data in this analysis, there is no significant correlation between student aid and affordability. Student aid was positively correlated to completion. Appropriations per student has a very different relationship with the report card grades. Appropriations per student is negatively correlated with completion and participation, but positively correlated with affordability. Indeed, those states that were grouped in the first quintile for appropriations, as shown in Appendix C, had very mixed results in completion, participation, and affordability.

States in the first quintile for student aid showed mixed results on participation and affordability, though most did well on completion. Of the four states in the top quintile for student aid shown in Table 6, only North Carolina received a strong grade for affordability. One is left with the impression that heavy investment in state student aid helps with completion but doesn't make college more affordable nor opportunities any more available for those who need it the most.

The next question I addressed directly placed participation rates at the center of the discussion. Do low grades in affordability hurt participation? And what is the effect of higher education appropriations and student aid on participation? Most importantly, how should a state balance appropriations and student aid to maintain participation, affordability, and completion?

This analysis gives no indication that either affordability or student aid impact participation. Direct appropriations to higher education per student actually has an inverse relationship with participation, from the report card data. Southern states were disproportionately represented (6 out of 10 states) in the first quintile of higher education appropriations per student, but only one Southern state in this quintile received a C+ on participation while the rest received D's and lower. Given that regional differences and state outliers do exist and may influence national data trends, the larger question is how states properly balance the two inputs of appropriations and student aid to maximize participation, affordability and completion.

CONCLUSION: MAXIMIZING PARTICIPATION, AFFORDABILITY AND COMPLETION

For the purposes of this section, benefits and preparation categories were not included, as neither showed significance to either of the two state inputs. Participation, affordability and completion were correlated to at least one of the state inputs. This section is concerned with analysis to investigate whether or not there is

an ideal balance between aid per student and appropriations per student that would maximize a state's report card grades in participation, affordability, and completion. Such an investigation is concerned with addressing this question for the nation as a whole. Regional and state differences will be outlined to the extent that major issues, outliers, or caveats need to be highlighted. These cases will surface most prominently in the individual state analysis, the final section of this report, for which New Mexico serves as an example.

To approach the question of state inputs and grade maximization, I looked at the three aforementioned report card categories simultaneously and compared them to the two state inputs. Appendix E shows each state's three-grade average for participation, affordability and completion. States were then sorted by the highest average for the three report card categories (Appendix F), by quintile. Thus, the ten states with the highest three-grade average were ranked in the first quintile, the next ten states with the second highest three-grade average were ranked in the second quintile, and so on.

An artificial ratio of student aid per student divided by appropriations per student was then generated to compare the "mix" of aid and appropriation strategy by averages, to see if any pattern emerged. The results of the ratio are also shown in the table in Appendix F, along with the states sorted by highest three-grade average. The ratio is multiplied by a factor of 100 just to scale each of the scores so that they are not too small and thus difficult to read and compare. The national average was 4.72. A ratio value above 4.72 indicates that the state devotes more to student aid relative to appropriations per student than the national state average. A ratio value below 4.72 indicates that the state devotes less to student aid relative to appropriations per student than the national state average. Table 7 summarizes the analysis in Appendices E and F.

Table 7

Top Average Scores for Participation, Affordability, and Completion by Quintile			
Quintile, Sorted by Highest Three-Grade Average	***Three-Grade Average***	***Ratio: Aid/Approp. x 100***	***Regional Trends***
1st Quintile	86	6.32	Five Northcentral states
2nd Quintile	81	4.34	Four Northeastern states
3rd Quintile	76	6.28	Four Western states
4th Quintile	73	2.76	Four Southern states
5th Quintile	68	4.02	Six Southern states
National Average	**77**	**4.72**	

For the most part, quintiles that favor aid in the aid-to-appropriations ratio seemed to be the most successful at reaching or exceeding the three-grade national average. Five Northcentral states surfaced in the top quintile of total average

performance, while Southern states were disproportionately represented in the bottom two quintiles. The second quintile contained four Northeastern states but was still below the national ratio average of 4.72. This quintile's average ratio value was brought down significantly by two Western states with very low ratio values (Wyoming and Utah). The fourth and fifth quintiles had averages that were well below the national average.

From the perspective of a quintile analysis, there is no discernable pattern of what mix of aid to appropriations yields a strong three-grade average. The ratio values for the first and third quintiles strongly favor an emphasis on aid, relative to the national average. The third quintile group was close to the three-grade national average, and the first quintile group easily exceeded it. The second quintile group exceeded the three-grade national average but favored appropriations over aid. What Table 7 does seem to indicate is that when the ratio value falls significantly below the national ratio average, total average performance suffers. The bottom two quintiles both had ratio values much lower than the national average, meaning they favored appropriations per student over student aid per student relative to the national average.

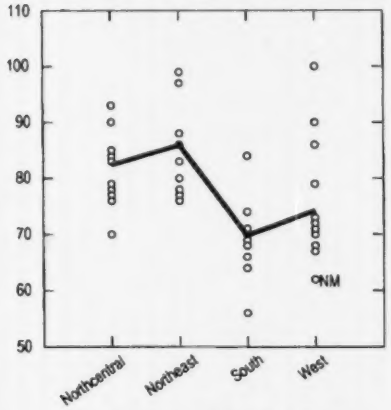
Individual state differences are certainly evident in the quintile groupings shown in Appendix F. This analysis was broad, intending to offer a general picture of the appropriation-to-aid mix and its effect on total average performance for three report card categories. Since individual state nuances must be analyzed within the context of the state, the next section uses New Mexico as an example of how the general analysis in the first three sections serves as a guide to offer ideas and recommendations concerning one state's performance.

Section IV

Individual State Analysis: The Example of New Mexico

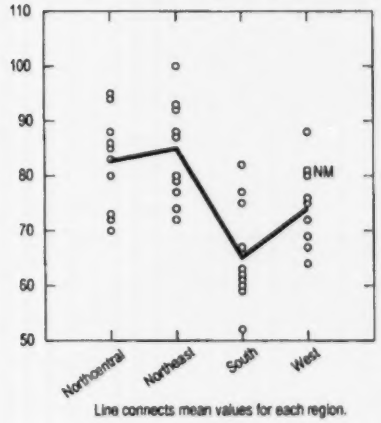
National and regional comparisons have been given across report card categories, derived ratios and state inputs. This section presents an example of a state analysis using New Mexico. New Mexico will be compared to its own region and the nation across report card grades, the ratios, and state inputs. Additional commentary or comparisons with other states or regions will be made where applicable or when certain contrasts surface that may be useful for policy consideration.

Figure 8
State Scores on Preparation (New Mexico)



Line connects mean values for each region.

Figure 9
State Scores on Participation (New Mexico)



Line connects mean values for each region.

STATE ANALYSIS

In Section I, a national look at regional trends across report card categories was presented. Each individual state was represented in each graphic in Section I by individual data points, but the data points did not have the associated state labels. The graphics are reproduced in this section with New Mexico indicated.

New Mexico's Preparation Compared by Region

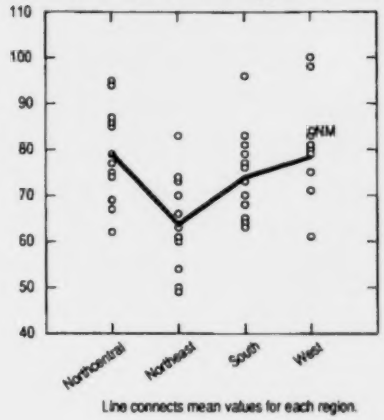
New Mexico's performance on preparation is shown in Figure 8. The state's placement on the graphic can be compared to its region and other regions across the nation. New Mexico's performance on preparation is the lowest in the Western region and the second lowest in the entire country. The state's preparation grade score of 62 was 16 points below the national average.

New Mexico's Participation Compared by Region

New Mexico's performance on participation is shown in Figure 9. The state's placement on the graphic can be compared to its region and other regions across the nation. New Mexico's performance in participation is second best in the Western region and very competitive compared to

states across other regions. The Western region's participation average was below the national average, but New Mexico's participation grade exceeded the national average by five points.

Figure 10
State Scores on Affordability (New Mexico)

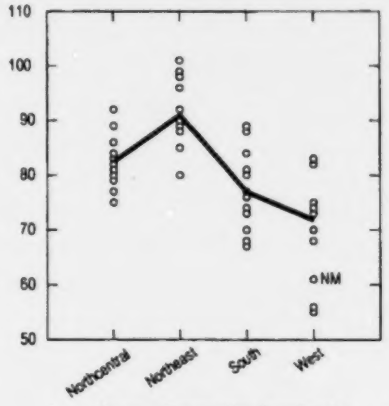


Line connects mean values for each region.

New Mexico's Affordability Compared by Region

New Mexico's performance on affordability is shown in Figure 10. The state's placement on the graphic can be compared to its region and other regions across the nation. The Western and Northcentral regions had the strongest performance on affordability, and New Mexico was above every regional average. New Mexico's affordability grade index score of 84 places it 10 points above the national average.

Figure 11
State Scores on Completion (New Mexico)

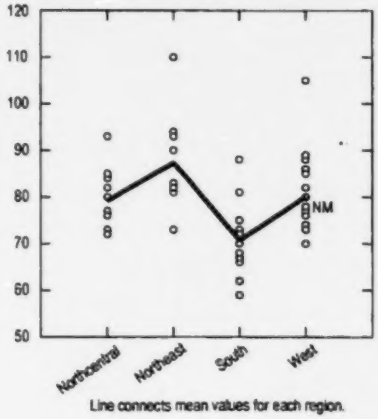


Line connects mean values for each region.

New Mexico's Completion Compared by Region

New Mexico's performance on completion is shown in Figure 11. As with preparation, the state's performance on completion is among the lowest in the nation. The Western region's average completion grade is 10 points below the national average, but New Mexico's completion grade is 19 points below the national average. The biggest performance gap between New Mexico and its region was in the area of preparation, but the biggest difference between New Mexico and the nation was in the area of completion. On both preparation and completion, New Mexico substantially underperforms compared to both regional and national data.

Figure 12
State Scores on Benefits (New Mexico)



Line connects mean values for each region.

New Mexico's Benefits Compared by Region

New Mexico's performance on benefits is shown in Figure 12. The state's placement on the graphic can be compared to its region and other regions across the nation. The Western and Northeastern regions had the strongest performance on benefits, but New Mexico was below the national and Western regional averages for the benefits category. It did not lag behind the national average or its regional average for this category to the extent that it lagged for preparation and completion, however.

New Mexico's Report Card Comparisons Summary

Table 8 summarizes in tabular form New Mexico's report card performance compared to its region and the nation.

Table 8

Comparative Data for New Mexico					
	Preparation	*Participation*	*Affordability*	*Completion*	*Benefits*
New Mexico	62	81	84	61	76
West	76	74	79	70	82
National	78	76	74	80	80

The comparative summary of data can lead to several conclusions regarding New Mexico's higher education. First, it is clear that the state is substantially underperforming in preparation and completion, compared to regional and national averages. New Mexico is also underperforming in the benefits category, but the smaller gap between the state's performance on benefits and the regional and national averages is worthy of mention. A likely explanation emerges from the correlation results. Preparation and completion are significantly correlated. Thus, we would generally expect poor state performance on completion if a state scored low on preparation. In addition, both preparation and completion are positively related to benefits, but only the relationship between preparation and benefits is statistically significant. Participation, however, is also significantly related to benefits. It appears that New Mexico's strong performance on participation is yielding some benefits to the state, and to some degree moderating the negative effect on the benefits score that we would expect because of low preparation.

One observation to be made from the New Mexico performance data is that there is not a balance between preparation and participation. And because both preparation and participation are significantly related to completion and benefits, one strategy for New Mexico would be to more fully address preparation issues as a priority while holding participation constant. New Mexico might still be able to maintain or even increase participation and completion, as students become more qualified to enroll in higher education.

The next two sections will probe the report card categories still further. The intent is to begin to get at possible repercussions, tradeoffs or points of synergy that surface from focusing on preparation over other report card categories. This will be done by drawing on the ratio and state input analyses.

New Mexico Comparative Ratio Analysis

The comparative ratio analysis for indicators developed and discussed in Section II provides further clues as to New Mexico's position regarding preparation, participation and completion, as well as suggestions for possible areas of emphasis. Table 9 compares New Mexico to both the Western region and the nation across all the ratios developed in Section II. A simultaneous view of multiple ratios is more

revealing than individual discussion of the ratios. Regional and national averages for the ratios were calculated and are presented in the table for comparative purposes.

Individually and cumulatively, the ratios in Table 9 offer a profile of New Mexico that speaks to both state and institutional efforts. The report card grades and the ratios would indicate that the state appears to be adequately fulfilling its function to make higher educational opportunities affordable, but that something within the higher education system is a source of difficulty.

Considering affordability, we know that the measure directly involves the state, as the subcategories of affordability include such indicators as state aid to low-income families. We also assume that affordability is partially a function of the state's appropriation investment in higher education, since appropriations presumably affect tuition and fees.

Table 9

Ratio Analysis: New Mexico Comparisons				
	NM	***West***	***Nation***	***NM Ratio Implication, Relative to National Average***
Participation/ Preparation	1.31	0.97	0.97	In NM not all who participate are prepared
Completion/ Preparation	0.98	0.92	1.02	In NM, even those who are prepared aren't completing
Participation/ Affordability	0.96	0.94	1.02	Given affordability in NM, participation should be even higher than it is relative to national ratio
Completion/ Affordability	0.73	0.89	1.07	Given affordability in NM, completion is much lower than expected
Benefits/ Participation	0.94	1.10	1.05	Lower benefits than expected given participation rates
Benefits/ Completion	1.25	1.16	1.00	NM derives greater than expected benefits from those who do complete

New Mexico's affordability grade score of 84 is well above the national average. But the ratio completion/affordability does not point to affordability as the problem; it points to completion. The state scores significantly below the national average of 1.07 on completion, meaning that New Mexico higher education is not completing as many graduates as the national average, given its respectable levels of affordability. Even as measured by the ratio participation/affordability, we find that, compared to the nation, affordability in New Mexico is so generous that participation is too low. New Mexico already has strong participation, but given affordability levels, we expect participation to be even greater than it is relative to the national average for this ratio. Both ratios involving affordability, along with the affordability grade itself, thus far indicate that the state is adequately funding higher education. The other ratios must be examined to gather additional clues.

The preparation ratios also provide insight. Only one other state in the entire nation, Alabama, has a higher participation/preparation ratio value than New Mexico. This means that higher education in such states as Alabama and New Mexico face greater challenges than the average state, because a large part of their enrollments are comprised of students who are not ready for postsecondary work but are participants in the institutions. One could reason that New Mexico institutions fare so poorly in completion because of the number of unprepared students they allow to participate.

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Moreover, the completion/preparation ratio adds another piece of information. Ideally, higher education should complete every student who is prepared. New Mexico falls below the national average of 1.02, which means New Mexico institutions are having difficulty completing even those who are prepared. New Mexico higher education, by this measure, is not adding value. This result somewhat overshadows the rationalization that completion rates are low because of low preparation. It points to the institutions themselves as the source of completion problems.

It is important here to note the individual grades for completion and preparation, since New Mexico's completion/preparation ratio does not substantially deviate from the national average. Both the preparation and completion grades are very low. Thus, even if New Mexico's ratio were to exceed the national average, the grades in the separate categories are sufficiently low that they demand attention.

If we look at New Mexico's preparation and participation ratios simultaneously, Alabama again provides a good basis for comparison, because Alabama shares some contextual similarities with New Mexico. Like New Mexico, Alabama has a very low preparation grade but provides participation opportunities beyond what one would expect given the level of preparation (participation/preparation). Both New Mexico's and Alabama's higher education allow students to participate who are not prepared. Yet, Alabama's completion grade is much higher than New Mexico's completion grade, and Alabama's completion/preparation ratio is significantly higher than New Mexico's. The interpretation is that Alabama higher education is somehow able to transform the input of unprepared participants into college graduates, whereas New Mexico is not. The National Center's *Measuring Up 2000* report further states that in both Alabama and New Mexico, the percentage of young adults going to college is relatively small, while the percentage of working age adults attending is large. In addition, Alabama, like New Mexico, has a higher than average number of children in poverty and a lower than average income per capita.

It is possible that factors not considered in this analysis are affecting Alabama's success on this ratio relative to New Mexico. For example, according to Net Migration numbers in *Measuring Up 2000*, Alabama is importing students. This may mean that in-state residents are being left out at the expense of out-of-state students. These out-of-state students may be more successful at completing, which would inflate the completion category for Alabama. Such alternative explanations probably require additional investigation.

Numerous factors may be impacting differences of performance between Alabama and New Mexico, but the similarities between the two provide a useful basis for comparison. No two states are ever going to be completely comparable, but these comparisons illustrate how we can use information about similar states to inform our interpretations of a given state's performance.

NEW MEXICO STATE INPUT ANALYSIS

The analysis of New Mexico for state inputs compared to the nation and Western region is the last piece of evidence considered before final recommendations are made for the state. Table 10 shows New Mexico state input comparative data.

From the analysis in Section III, the general indication was that states that slightly favor aid in the aid/appropriations ratio seem to attain the most successful total average performance on participation, affordability, and completion. New Mexico's aid/appropriations ratio of 5.40 is above the national average, yet the state is in the third quintile for total average performance on participation, affordability, and completion.

Table 10

New Mexico State Input Comparative Data			
	Aid per Student ($)	***Appropriations per Student ($)***	***Aid/Approp. x 100***
New Mexico	312	5,782	5.40
West	108	4,656	2.31
National	221	4,689	4.72

New Mexico's mixture of aid/appropriations seems to be working in terms of affordability and participation, but not for completion. It would appear that New Mexico has a reasonable mix of aid to appropriations, compared with other states. In fact, Halstead (1997) calculates that given its tax revenues, New Mexico has supported higher education to a greater extent than other states. In 1991, the percent of total state tax revenues going to higher education in New Mexico was 12.5%, compared to a national average of 7.0%. In 1997, a year in which New Mexico higher education's share of the state budget was declining, figures for New Mexico were still significantly higher than the national average, at 10.1% versus 6.0%, respectively. From this evidence, it appears that increased appropriations per student that go directly to higher education will not improve completion. There is nothing to indicate that the state must change its current strategy of how or how much it funds higher education.

IMPLICATIONS FOR POLICY

Context

Every state has a unique landscape that contributes to its current performance and the state of its higher education affairs. In New Mexico, The New Mexico Commission on Higher Education (CHE) is the statutory coordinating body that works to offer a statewide perspective in recommending and establishing policy direction for New Mexico higher education. Institutional budgets go through the CHE, which in turn makes funding recommendations to the legislature. It is widely known, however, that institutions independently approach the legislature for special funds on a yearly basis.

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The CHE also manages and distributes student financial aid. The constitutional autonomy of the six state universities may, from a structural standpoint, be a countervailing force against the effort to establish a statewide view of higher education. A recent report by Aims McGuinness and commissioned by the CHE gave no strong indication that statewide policy priorities or perspectives were evident in the state.

The following recommendation is based on the analysis conducted in this report.

Recommendation: Two Areas for Consideration

New Mexico may well be financing an expensive higher education system, since there are a large number of institutions, given its population base. This has resulted in strong participation, but there are weaknesses in preparation, completion and benefits. There is not a reasonable balance in performance across the report card categories. In addition, there is no indication that institutions need additional funding relative to national comparisons made throughout this analysis. Current New Mexico investment, as shown through higher education appropriations and student aid, places the state in the first and second quintiles in these categories, respectively. The state is also affordable and students enjoy high participation rates.

The problems of preparation and completion seem to be at issue, and since state investment in the higher education system and student aid appears to be sufficient, two suggested avenues for policy consideration would be: (1) encourage New Mexico policymakers to urge institutions to redirect existing state funds (which are sufficient) to areas that address preparation and completion, or (2) provide actual incentives for institutions that complete students while keeping admissions requirements constant.

The first recommendation is made in light of the realization that policymakers currently do not control where institutional money goes once an appropriation is made to an institution. Given that four-year institutions enjoy constitutional autonomy, this is unlikely to change. The best avenue for the state is to provide encouragement for those institutions that focus monies on preparation areas such as teacher education.

New Mexico should make student preparation a priority. Preparation is significantly correlated to completion, so presumably an increase in preparation would increase the completion grade. There is nothing in the analysis to suggest that increased levels of direct higher education appropriation per student (unless this appropriation were specifically going to some facet of student preparation) or student aid per student would improve either preparation or completion. The state should encourage institutions to redirect existing resources to the priority areas of preparation and completion. The state may also consider providing earmarked money

for those institutions that create programs or address issues related to preparation and completion.

The second recommendation formalizes the first: provide incentives for those institutions that demonstrate progress in graduation rates without changing admissions requirements. Access is a part of New Mexico's culture and is commonly affiliated with both affordability and participation. The incentives should require that participation and affordability should remain constant while showing increases in completion or preparation.

In a state like New Mexico, it is highly unlikely that regulatory action will yield fruitful results. Incentives may be more effective, especially given the recent effort by institutions and the Council of University Presidents to take the lead in creating accountability measures for the institutions. The notion of state accountability is also something of interest to the Legislature, so it may have the necessary momentum for formalization.

A Final Word

This report was created to highlight different analyses that might prove useful as supplementary material to *Measuring Up 2000*. The National Center may wish to pursue some of these ideas further; other ideas may not seem useful for further analysis. Offering a policy recommendation was something I considered important, since states who are serious about the report card are looking for suggestions. Obviously, knowledgeable insiders for each state would have to provide insight to supplement the quantifiable aspects of such a recommendation.

Appendix A

State Regional Groupings According to WICHE			
Northcentral	***Northeast***	***South***	***West***
Illinois	Connecticut	Alabama	Alaska
Indiana	Delaware	Arkansas	Arizona
Iowa	Maine	Florida	California
Kansas	Maryland	Georgia	Colorado
Michigan	Massachusetts	Kentucky	Hawaii
Minnesota	New Hampshire	Louisiana	Idaho
Missouri	New Jersey	Mississippi	Montana
Nebraska	New York	North Carolina	Nevada
North Dakota	Pennsylvania	Oklahoma	New Mexico
Ohio	Rhode Island	South Carolina	Oregon
South Dakota	Vermont	Tennessee	Utah
Wisconsin		Texas	Washington
		Virginia	Wyoming
		West Virginia	

Source: Western Interstate Commission on Higher Education, *Knocking at the College Door* (Denver: 1998).

Appendix B

Correlations Between Graded Categories in *Measuring Up 2000*					
	Preparation	***Affordability***	***Participation***	***Completion***	***Benefits***
Preparation	1.000	.088	.550**	.301*	.551**
Affordability	.088	1.000	.095	−.356*	.008
Participation	.550**	.095	1.000	.318*	.642**
Completion	.301*	−.356*	.318*	1.000	.244
Benefits	.551**	.008	.642**	.244	1.000

Pearson Correlations, Two-tailed test
*Significant at .05 level
**Significant at .001 level

Appendix C

State Quintile Groups, By Aid per Student and Appropriations per Student

	State	State Aid per Student ($)	State	Appropriations per Student ($)	
1st Quintile	GA	861	MS	7,859	1st Quintile
	NY	766	NC	6,944	
	NJ	639	AK	6,698	
	IL	552	HI	6,345	
	PA	551	GA	6,070	
	MN	486	KY	6,032	
	VT	407	AR	5,897	
	IN	394	CT	5,835	
	NC	360	NM	5,782	
	VA	357	AL	5,688	
2nd Quintile	OH	316	NJ	5,491	2nd Quintile
	NM	313	MN	5,487	
	IA	310	SC	5,352	
	LA	295	IA	5,251	
	FL	292	ND	5,235	
	MA	291	ID	5,160	
	CT	276	WY	5,034	
	CO	267	WV	4,934	
	WA	262	NE	4,902	
	KY	251	MD	4,873	
3rd Quintile	WI	234	OK	4,843	3rd Quintile
	MD	214	TX	4,836	
	MI	206	IN	4,796	
	AR	197	VA	4,791	
	OK	192	FL	4,767	
	CA	192	LA	4,719	
	WV	174	DE	4,549	
	ME	163	TN	4,542	
	SC	149	OH	4,493	
	MO	140	NV	4,463	
4th Quintile	OR	108	MI	4,438	4th Quintile
	NV	105	CA	4,435	
	TN	100	OR	4,377	
	RI	92	ME	4,292	
	TX	79	WA	4,289	
	KS	76	IL	4,173	
	ND	65	WI	4,060	
	AK	55	KS	4,006	
	DE	52	MO	3,879	
	NE	49	PA	3,822	
5th Quintile	AL	40	UT	3,780	5th Quintile
	MT	35	NY	3,777	
	NH	33	SD	3,751	
	UT	20	MT	3,417	
	ID	20	CO	3,411	
	AZ	11	AZ	3,335	
	HI	9	MA	3,310	
	MS	8	RI	2,419	
	WY	6	VT	1,992	
	SD	0	NH	1,798	

Source: *Chronicle of Higher Education Almanac*, 2000–01. State appropriations and state student aid data are for 1999–2000 and 1998–99, respectively.

Appendix D

Correlation Analyses Between Report Card Categories and State Inputs

Pearson Correlation Matrix for all Regions		
	Approp./Student	***Aid/Student***
Preparation	–0.250	0.152
Participation	–0.290*	–0.032
Affordability	0.398**	0.108
Completion	–0.385**	0.310*
Benefits	–0.277	0.114

*Significant at .05
**Significant at .001

Pearson Correlation Matrix for all Regions Except the Northeast		
	Approp./Student	***Aid/Student***
Preparation	–0.289	0.036
Participation	–0.316*	–0.081
Affordability	0.063	0.140
Completion	–0.086	0.419**
Benefits	–0.369*	0.053

*Significant at .05
**Significant at .001
Number of observations: 39

Pearson Correlation Matrix for Western States		
	Approp./Student	***Aid/Student***
Preparation	–0.193	–0.172
Participation	0.066	0.328
Affordability	–0.019	0.301
Completion	–0.359	–0.003
Benefits	–0.368	0.481

No Significance at .05 or .001

Appendix D Source: *Chronicle of Higher Education Almanac*, 2000–01. State appropriations and state student aid data are for 1999–2000 and 1998–99, respectively.

Appendix E

State Grade Averages for Participation, Affordability and Completion			
State	***Average***	***State***	***Average***
AL	74.3	MT	67.0
AK	66.3	NE	82.0
AZ	72.0	NV	68.7
AR	68.0	NH	76.7
CA	87.0	NJ	83.3
CO	78.7	NM	75.3
CT	83.3	NY	76.7
DE	85.0	NC	83.7
FL	73.0	ND	81.7
GA	66.7	OH	72.3
HI	75.0	OK	75.3
ID	72.3	OR	66.3
IL	89.7	PA	82.3
IN	77.0	RI	80.0
IA	86.7	SC	72.7
KS	87.7	SD	73.7
KY	72.0	TN	68.7
LA	67.7	TX	70.0
ME	73.0	UT	80.7
MD	79.7	VT	76.3
MA	82.3	VA	80.7
MI	80.0	WA	78.3
MN	87.7	WV	68.7
MS	72.7	WI	85.7
MO	73.7	WY	80.7

Appendix F

Ratio Values for (Student Aid per Student/Appropriations per Student) Sorted by 3-Grade Average Quintile

	State	3-Grade Ave.*	Aid ($)	Approp. ($)	Aid/Approp. x 100	Region
1st Quintile	IL	89.7	552	4,173	13.24	Northcentral
	KS	87.7	76	4,006	1.89	Northcentral
	MN	87.7	486	5,487	8.86	Northcentral
	CA	87.0	192	4,435	4.33	West
	IA	86.7	309	5,251	5.89	Northcentral
	WI	85.7	234	4,060	5.77	Northcentral
	DE	85.0	52	4,549	1.14	Northeast
	NC	83.7	359	6,944	5.18	South
	CT	83.3	276	5,835	4.74	Northeast
	NJ	83.3	639	5,491	11.64	Northeast
	1st Quintile Averages		**318**	**5,023**	**6.32**	
2nd Quintile	MA	82.3	291	3,310	8.80	Northeast
	PA	82.3	551	3,822	14.41	Northeast
	NE	82.0	49	4,902	0.99	Northcentral
	ND	81.7	65	5,235	1.24	Northcentral
	UT	80.7	20	3,780	0.53	West
	WY	80.7	6	5,034	0.11	West
	VA	80.7	357	4,791	7.45	South
	RI	80.0	92	2,419	3.79	Northeast
	MI	80.0	206	4,438	4.65	Northcentral
	MD	79.7	214	4,873	4.38	Northeast
	2nd Quintile Averages		**185**	**4,260**	**4.34**	
3rd Quintile	CO	78.7	267	3,411	7.83	West
	WA	78.3	262	4,289	6.12	West
	IN	77.0	394	4,796	8.22	Northcentral
	NH	76.7	33	1,798	1.82	Northeast
	NY	76.7	766	3,777	20.28	Northeast
	VT	76.3	407	1,992	20.42	Northeast
	NM	75.3	312	5,782	5.40	West
	OK	75.3	192	4,843	3.96	South
	HI	75.0	9	6,345	0.14	West
	AL	74.3	40	5,688	0.70	South
	3rd Quintile Averages		**268**	**4,272**	**6.28**	
4th Quintile	MO	73.7	140	3,879	3.60	Northcentral
	SD	73.7	0	3,751	0.00	Northcentral
	FL	73.0	292	4,767	6.12	South
	ME	73.0	162	4,292	3.79	Northeast
	MS	72.7	8	7,859	0.10	South
	SC	72.7	149	5,352	2.79	South
	ID	72.3	19	5,160	0.38	West
	OH	72.3	316	4,493	7.03	Northcentral
	AZ	72.0	11	3,335	0.32	West
	KY	72.0	251	6,032	4.15	South
	4th Quintile Averages		**135**	**4,892**	**2.76**	
5th Quintile	TX	70.0	79	4,836	1.63	South
	NV	68.7	105	4,463	2.36	West
	TN	68.7	100	4,542	2.20	South
	WV	68.7	174	4,934	3.52	South
	AR	68.0	197	5,897	3.34	South
	LA	67.7	295	4,719	6.24	South
	MT	67.0	34	3,417	1.01	West
	GA	66.7	861	6,070	14.19	South
	AK	66.3	55	6,698	0.81	West
	OR	66.3	108	4,377	2.47	West
	5th Quintile Averages		**201**	**4,995**	**4.02**	
	National Average				**4.72**	

* The three-grade averages are for participation, affordability, and completion.

Source: *Chronicle of Higher Education Almanac*, 2000–01. State appropriations and state student aid data are for 1999–2000 and 1998–99, respectively.

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Measuring Up 2000: The State-by-State Report Card for Higher Education (November 2000, #00-3). This first-of-its-kind report card grades each state on its performance in higher education. The report card also provides comprehensive profiles of each state and brief states-at-a-glance comparisons. Visit **www.highereducation.org** to download *Measuring Up 2000* or to make your own comparisons of state performance in higher education. Printed copies are available for $25.00 by calling 888-269-3652 (discounts available for large orders).

Beneath the Surface: A Statistical Analysis of the Major Variables Associated with State Grades in Measuring Up 2000, by Alisa F. Cunningham and Jane V. Wellman (November 2001, #01-04). Using statistical analysis, this report explores the "drivers" that predict overall performance in *Measuring Up 2000*.

Supplementary Analysis for Measuring Up 2000: An Exploratory Report, by Mario Martinez (November 2001, #01-03). Explores the relationships within and between the performance categories in *Measuring Up 2000*.

Some Next Steps for States: A Follow-up to Measuring Up 2000, by Dennis Jones and Karen Paulson (June 2001, #01-2). What are the next steps states can take to improve performance in higher education? This report provides an introduction to the kinds of actions states can take to bridge the gap between the performance areas identified in *Measuring Up 2000* and the formulation of effective policy.

A Review of Tests Performed on the Data in Measuring Up 2000, by Peter Ewell (June 2001, #01-1). Describes the statistical testing performed on the data in *Measuring Up 2000* by the National Center for Higher Education Management Systems.

Recent State Policy Initiatives in Education: A Supplement to Measuring Up 2000, by Aims McGuinness, Jr. (December 2000, #00-6). Highlights education initiatives that states have adopted since 1997–98.

Assessing Student Learning Outcomes: A Supplement to Measuring Up 2000, by Peter Ewell and Paula Ries (December 2000, #00-5). National survey of state efforts to assess student learning outcomes in higher education.

Technical Guide Documenting Methodology, Indicators and Data Sources for Measuring Up 2000 (November 2000, #00-4).

A State-by-State Report Card on Higher Education: Prospectus (March 2000, #00-1). Summarizes the goals of the National Center's report card project.

Great Expectations: How the Public and Parents—White, African American and Hispanic—View Higher Education, by John Immerwahr with Tony Foleno (May 2000, #00-2). This report by Public Agenda finds that Americans overwhelmingly see higher education as essential for success. Survey results are also available for the following states:

Great Expectations: How Pennsylvanians View Higher Education (May 2000, #00-2b)
Great Expectations: How Floridians View Higher Education (August 2000, #00-2c)
Great Expectations: How Coloradans View Higher Education (August 2000, #00-2d)
Great Expectations: How Californians View Higher Education (August 2000, #00-2e)
Great Expectations: How New Yorkers View Higher Education (October 2000, #00-2f)
Great Expectations: How Illinois Residents View Higher Education (October 2000, #00-2h)

State Spending for Higher Education in the Next Decade: The Battle to Sustain Current Support, by Harold A. Hovey (July 1999, #99-3). This fiscal forecast of state and local spending patterns finds that the vast majority of states will face significant fiscal deficits over the next eight years, which will in turn lead to increased scrutiny of higher education in almost all states, and to curtailed spending for public higher education in many states.

South Dakota: Developing Policy-Driven Change in Higher Education, by Mario Martinez (June 1999, #99-2). Describes the processes for change in higher education that government, business and higher education leaders are creating and implementing in South Dakota.

Taking Responsibility: Leaders' Expectations of Higher Education, by John Immerwahr (January 1999, #99-1). Reports the views of those most involved with decision-making about higher education, based on a survey and focus groups conducted by Public Agenda.

The Challenges and Opportunities Facing Higher Education: An Agenda for Policy Research, by Dennis Jones, Peter Ewell, and Aims McGuinness (December 1998, #98-8). Argues that due to substantial changes in the landscape of postsecondary education, new state-level policy frameworks must be developed and implemented.

Higher Education Governance: Balancing Institutional and Market Influences, by Richard C. Richardson, Jr., Kathy Reeves Bracco, Patrick M. Callan, and Joni E. Finney (November 1998, #98-7). Describes the structural relationships that affect institutional effectiveness in higher education, and argues that state policy should strive for a balance between institutional and market forces.

Federal Tuition Tax Credits and State Higher Education Policy: A Guide for State Policy Makers, by Kristin D. Conklin (December 1998, #98-6). Examines the implications of the federal income tax provisions for students and their families, and makes recommendations for state higher education policy.

The Challenges Facing California Higher Education: A Memorandum to the Next Governor of California, by David W. Breneman (September 1998, #98-5). Argues that California should develop a new Master Plan for Higher Education.

Tidal Wave II Revisited: A Review of Earlier Enrollment Projections for California Higher Education, by Gerald C. Hayward, David W. Breneman and Leobardo F. Estrada (September 1998, #98-4). Finds that earlier forecasts of a surge in higher education enrollments were accurate.

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